DOCUMENT RESUME

ED 416 377 CE 075 847

AUTHOR	Galusha, Jill M.
TITLE	Barriers to Learning in Distance Education.
PUB DATE	1998-00-00
NOTE	23p.
PUB TYPE	Information Analyses (070)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Adult Education; *Adult Learning; *Adult Students; *Distance Education; Learning Processes; Teacher Qualifications

ABSTRACT

Distance learning is an excellent method of teaching adult learners because they need flexibility to contend with competing priorities. Adult learning is not without problems, however, such as loss of motivation because of lack of face-to-face contact with teachers and peers, potentially prohibitive start-up costs, and lack of faculty support. In addition to these barriers to distance learning, a literature review found that learners involved in distance education are more likely to have insecurities about the following: learning, self-evaluation problems, lack of support services such as tutors and technical assistance, feelings of isolation, and inexperience with this mode of learning, which leads to academic problems. Faculty barriers to distance learning include lack of training in course development and technology, lack of support for distance learning, and inadequate faculty selection for distance learning courses. Organizational barriers include infrastructure, lack of technology, course curriculum, and student evaluation. Research aimed at countering these problems should be undertaken so that distance learning, which can be a valuable learning method, can be carried on more effectively. (Contains 27 references.) (KC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 416 377

Running head: BARRIERS TO DISTANCE LEARNING

Barriers to Learning in Distance Education

Jill M. Galusha

University of Southern Mississippi

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

J. Galusha

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

BEST COPY AVAILABLE

CE075 841

Abstract

Distance learning is an excellent method of reaching the adult learner. Because of the competing priorities of work, home, and school, adult learners desire a high degree of flexibility. The structure of distance learning gives adults the greatest possible control over the time, place and pace of education; however, it is not without problems. Loss of student motivation due to the lack of face-to-face contact with teachers and peers, potentially prohibitive startup costs, and lack of faculty support are all barriers to successful distance learning. This literature review explores distance learning and its barriers.

Barriers to Learning in Distance Education

Introduction

While distance education has been in existence for at least 100 years, the medium has changed from pencil and paper correspondence courses to real-time Internet courses. But regardless of the medium, distance courses have common characteristics and, likewise, have similar problems. This literature review examines the different types of distance education and its significance as a learning method. Student demographics are presented and their relevance to distance learning barriers established. Lastly, the nature of student, faculty, organization, and course curriculum and their respective impact on distance learning are explored.

Definition and Context of Distance Learning

A brief discussion of the underlying principles behind distance learning is necessary to understand the associated problems. In 1973 Moore introduced the theory of independent study. An important foundation of distance education, it suggests that successful teaching can take place even though teacher and learner are physically separated during the learning process. While this separation can occur in several ways depending on the nature of the course content and delivery medium, this paper will not differentiate between non-traditional, electronically mediated (i.e., real-time, computer network or videoteleconferencing) and traditional coursework (i.e., correspondence courses) because many of the barriers exist within both types of distance education. Electronic mediated courses use telephone lines, cable, satellite, and microwave networks to transmit voice, video, and data.

Most distance education programs employ a combination of audiovisual media to facilitate learning. As in the entertainment industry, audiocassette, telephone, radio, compact disc, television, video, computer and printed resources are used to deliver instruction.

Significance of Distance Education

In preparing to enter the next century, educators of adults face the challenge of serving a student population and society that is increasingly diverse. Moving into the next century, the adult student population is expected to be the fastest growing segment of higher education and, in fact, older students will constitute the majority. Cantelon, in his 1995 book, Facilitating Distance Education, projects "... most of higher education will take place off-campus through technological methods of delivery (p. 5). While distance education is already a fact of life for most universities and an increasing number of community colleges, knowing the intrinsic problems and overcoming them will be critical to successful implementation of distance programs on a larger scale in the future.

In distance learning students and teachers will find themselves playing different roles than is the norm in traditional education. The teacher is no longer the sole source of knowledge but instead becomes a facilitator to support student learning, while the student actively participates in what and how knowledge is imparted. More than any other teaching method, distance learning requires a collaborative effort between student and teacher, unbounded by the traditional limits of time, space, and single-instructor effort.

Technology has also changed the face of education. Advances in telecommunications technology has opened up the possibility of personal and group interaction in distance education.

Both computer and audio conferencing permit the introduction of class discussions without the group meeting face to face. Phone calls and electronic mail replaces personal office visits. The distance learner can now have almost the same instructional contact and interaction as the student on campus. But remote access education does not need to eliminate all the benefits of human contact. In fact, the proliferation of the modem, teleconferencing, and the World Wide Web provide a rich expanse of both information and contacts that were previously unavailable. Albeit two dimensional, these media lend themselves to pure ideas and thought processes. This purity lends itself to isolation of both the cognitive and affective domains – an additional benefit of this communication medium.

Student Demographics

Changes in technology have accelerated the growth of distance learning. The improved access and availability of electronic technology has enabled more adult students to participate in the learning process. Students who enroll in distance learning courses do so for convenience. They are either time-bound due to work or travel schedules or location-bound due to geographic or family responsibilities.

Distance learning is student-centered learning; thus knowing the characteristics and demographics of the distance learners helps us understand the potential barriers to leaning. Although students' characteristics and needs may not guarantee success in a distance education course or program, it is easy to defend these factors as contributing to success. Additionally, knowledge about student characteristics and motivators help us understand who is likely to participate in distance education and, conversely, why others choose not to participate.

Student motivation has a powerful affect on attrition and completion rates, regardless of institutional setting. Motivators for adult distance students are often different from those of traditional students. Knowles (1980), in explaining the advantages of knowing the learner, believes that learner behavior is influenced by a combination of the learner's needs plus the learner's situation and personal characteristics. Knowing these personal characteristics is an important aspect of planning distance learning courseware and strategies. More importantly, knowing the participants can help drive program planning and policy formation, factors that are important to participation and success in distance learning.

Knox's (1977) developmental-stage orientation of adult life stresses the importance of understanding an individual's contextual situation, that is, he believes their family, work, and community roles; physical condition; personality; and earning interests all affect the adults ability and willingness to participate in adult education. Further complicating the issue, deterrence to participation is exasperated by a prospective student's perception of the magnitude of his problems. In other words, "deterrents" is a multidimensional concept. No single factor appears to cause nonparticipation; however, individual student characteristics and life circumstances appear to have the greatest impact on participation (Kerka, 1986).

A 1984 survey of tele-course participants found that about two-thirds were women, and about half of the students were at least thirty years old. Over half had at least one dependent and two-thirds were married. Eighty percent were employed, and over half of these were working full-time while pursuing their studies (Sheets, 1992). More recent information seems to confirm these statistics. Over 70% of recent graduates who studied by the distance mode are in full-time

employment. This suggests that a significant proportion were employed while they were involved in the learning process (Wood, 1996).

Educational level prior to enrollment in a distance course or program has been found to be significantly related to persistence (Rekkedal, 1983). The educational background of distance students ranges from less than high school to completion of a university degree. However, 20% of U.S. tele-course students had at least an associate degree (Sheets, 1992). It is plausible that these students have and edge over new students because they already have study habits necessary to be successful in any academic setting. It is not surprising that researchers have found that students who had prior experience with nontraditional education were more likely to persist than those with exclusively conventional experience (Rekkedal, 1983).

In addition to prior educational level and prior experience level, personal factors and academic information help us to understand what motivates, and therefore, what potential barriers exist, in educating the distance student. Older students (over 50) appear to have higher course completion rates (Rekkedal, 1983). This makes sense in that older students probably have greater coping skills in dealing with the problems of distance learning. Interestingly, Carr and Ledwith (1980) found that housewives tended to drop out less than the general distance learner population. Conversely, the course dropout rate of those who listed manual trades as an occupation was 50% higher than the overall rate (Cookson, 1989).

Putting student demographics together, one can see adult distance learners are a diverse population; however, in general one can say the adult distance learner is typically employed full time, and has personal commitments that compound his efforts in furthering his education.

While these are characteristics shared by most adult learners, the distance learner has additional barriers to learning that is particular to the distance learning environment.

Student Barriers to Distance Learning

Problems and barriers encountered by the student fall into several distinct categories; costs and motivators, feedback and teacher contact, student support and services, alienation and isolation, lack of experience, and training.

More so than traditional students, distance learners are more likely to have insecurities about learning (Knapper, 1988). These insecurities are founded in personal and school related issues such as financial costs of study, disruption of family life, perceived irrelevance of their studies and lack of support from employers. These pressures often result in higher dropout rates than among traditional students (Sweet, 1986).

A second area of concern for the distance student is the perceived lack of feedback or contact with the teacher. Because there is not daily or weekly face to face contact with teachers, students may have trouble in self-evaluation. Keegan (1986) believes that the separation of student and teacher imposed by distance removes a vital "link" of communication between these two parties. The link must be restored through overt institutional efforts so that the teaching-learning transaction may be "reintegrated" (Keegan, 1986, p. 120). Citing Tinto (1975), Keegan hypothesized that students who did not receive adequate reintegration measures such as electronic or telephone communication, would be less likely to experience complete academic and social integration into institutional life. Consequently, such students would be more likely to drop out (Sheets, 1992).

These barriers can be mitigated through technological methods such as e-mail. Computer conferencing and electronic mail can be integrated into the delivery of the course to provide the missing interactivity. Because both are essentially asynchronous, they continue to leave the student in charge of setting his or her own work times -- a critical success factor for the distance student. It is important that the student receive prompt feedback in any institutional setting, particularly in distance learning where the learner is impaired by the lack of casual contact with the teacher and other students. This is especially important for those students who live outside metropolitan areas. They may not have access to reliable telecommunications, computers, and postal mail. The frustrations resulting from problems with communication between student and academic institution are factors of which distance education planners should be well aware (Wood, 1996).

A third area of concern for distance students is the lack of support and services such as providing tutors, academic planners and schedulers, and technical assistance. The isolation that results from the distance learning process can complicate the learning process for adult students. Support for distance learners should not be overlooked when planning distance programs. Students need tutors and academic planners to help them complete courses on time and to act as a support system when stress becomes a problem. Planners from Washington State University (WSU) note that "student services are a significant part of the budgeted costs of the program." They also believe that " success in attracting, serving, and retaining students will hinge more on excellent student support services than on any technology issues." (Oaks, 1996). Technology costs and considerations can be a source of budgeting problems; however, student support for distance learners should take precedence.

A fourth problem area is the feelings of alienation and isolation reported by distance students. Students of all kinds want to be part of a larger school community, and simply a member of a "correspondence" course. For many traditional students, this is an important part of their social lives. The "distance" aspect of distance learning takes away much of the social interactions that would be present in traditional learning environments. This problem must be mitigated by institutions providing a sense of personal involvement between the student and the institution. One way to help solve this problem is through the use of tutors that communicate with students either electronically or by phone. Students believe that having a good tutor is vitally important in helping them get the most out of a course and achieve a credit (Meacham & Evans, 1989).

Geographical isolation has been identified as one of the major problems for distance students (Meacham and Evans 1989). In addition to the practical problems of contacting academic and administrative staff, obtaining study materials and borrowing library books, distance students suffer from the disadvantage of being unable to interact with other students and are often denied the perception that they belong to a scholarly community. This may lead to feelings of inadequacy and insecurity, and a lack of confidence in their own abilities (Wood, 1996).

A fifth problem is prevalent with newer distance students. If distance learning institutions are serious about providing equity of educational opportunity to all, then careful consideration must be given to the special needs of students undertaking distance education for the first time. Of particular importance is the design of study materials for distance students.

Study materials must take into account the significant proportion of students who enroll with little or no experience of distance study. These students are at risk of dropping out unless they develop study survival skills as rapidly as possible (Wood, 1996).

Another problem encountered by students is the lack of student training, particularly in reference to technical issues. Many adult students are not well versed in the uses of technology such as computers and the Internet. Using electronic medium in distance learning can inadvertently exclude students who lack computer or writing skills. These skills are required if computer technology is used. Students will typically be offered volumes of electronic-based information. Using this information will be a problem for some non-technical students. They must be taught how to manage, not only their study time, but the materials presented as well.

If students are undertaking distance learning courses that require knowledge of computers, then the students must be taught, at a minimum, the fundamentals of operating the system of choice of the distance-taught course. If distance learning is to be successful, technical barriers must be made a non-issue.

Faculty Barriers in Distance Learning

Faculty experience problems such as lack of staff training in course development and technology, lack of support for distance learning in general, and inadequate faculty selection for distance learning courses. Sometimes the coursework for traditional and distance students is the same. Often it is not. There can be a lot of up front effort in designing distance learning material. This can impose a burden on teachers who already have material for traditional classrooms. Computers, video equipment, communications software, and the like, present

challenges and frustrations. Faculty must know how to the use these technologies if they are to teach distance courses. Training students and staff, particularly in troubleshooting problems, is imperative to success in technical distance learning.

Perhaps the biggest problem for distance programs is the lack of support by the faculty. The endorsement by department faculty is viewed as a critical instructional element in any distance education program. More than any other participant, faculty roles must change the most in administering distance learning programs. This can be difficult adjustment for some teachers. They must change teaching styles to that of a mentor, tutor, and facilitator. They must meet the needs of distance students without face-to-face contact. Since the majority of distance learners are adults, teachers may need to change their teaching style. This may be challenging for teachers who are used to teaching with 18 to 22-year-olds. Faculty is responsible for changing their course content to accommodate diverse student needs and expectations. So long as college faculty feels there is a burden associated the distance education program currently in place, there will be little support for expanding distance education opportunities. There are a number of reasons for this lack of support.

Teachers may lack the basic skills or hardware to fully participate in distance education. The advent of computers, telecommunications, and the World Wide Web provides an unprecedented opportunity for faculty and students to learn in a cooperative environment. It is interesting to note, however, that students respond to this changing environment more adeptly than teachers do. At California State University, for example, more than 50% of the student body own home computers while less than 50% of the faculty (Syllabus Magazine, 1996). Obtaining proper equipment and training is critical in teacher acceptance of distance learning.

Another problem perceived by faculty is the threat to tenure and human resource staffing. Depending on the school and the academic department, courses taught as part of a distance program may not always count toward tenure considerations, thus causing a disincentive for participation by some non-tenured faculty (Oaks, 1996). Additionally, if one professor can serve thousands of students there will obviously be fewer professors and fewer departments and faculties. Schools must not underestimate this resistance and should be very aware of the possibility of overburdening faculty and staff.

Teachers also have problems respecting the academics of distance courses. One way of enhancing commitment is by forcing distance courses through the same approval process as on-campus courses. In 1994, Chou wrote, "By going through the same stringent approval process as on-campus courses, the acceptance...among college faculty is enhanced." (p. 25).

The final barrier is the teacher's acceptance of distance learning programs. Teachers with enthusiasm for this non-traditional coursework are best suited to teach them. One way to mitigate these potentially serious problems is by selecting teachers who are relatively senior people, good teachers, like the idea of distance learning and want to participate in it. Interest and motivation are not success factors reserved only for the student. Faculties who want to teach distance courses are certainly more likely to be successful than faculty that are forced to teach these courses.

Organizational Barriers in Distance Learning

Student and teacher concerns represent the human aspects of distance programs. Organizational problems, especially infrastructure and technology problems, also present challenges. Faculties who teach distance education courses need organizational and

administrative support from the institution. Funding should be provided to create an administrative unit that is to be responsible for managing the program. Institutional leaders must be committed to distance programs. Marrs (1995) agrees when he says, "Without this support, distance education is at risk of becoming a peripheral activity, without commitment from or significance to the institution." (p. 21)

Technology considerations are self-evident but are the most easily solved. Technology problems include; financing new technology, telecommunications, hardware issues, course production and technology, and Internet problems.

A primary concern for both learning institutions and students is availability of funds. When technology is used, the costs increase substantially for both the student and the institution. Universities must consider the initial costs as well as the continuing costs of installing, maintaining, using, and upgrading technology to support distance services. Telecommunications and connectivity costs such as those needed to use the Internet, are ongoing costs. Washington State University (WSU) did not anticipate connectivity costs and subsequent barriers in planning their distance program. This led to additional investments in toll-free lines and computers (Oaks, 1996). Institutions must also plan to have competent computer staff to support Internet use. These staff must then be kept up-to-date on the newest, fastest, cheapest technology available; therefore, ongoing staff training costs must be considered

The student must also incur technology costs. If the Internet is used, then the student must have access to a computer, modem, and associated software. Additionally, telephone charges to the Internet service provider will be incurred. For many institutions; however, technology pays for itself in terms of allowing more students to participate, thus increasing

tuition funding. This sounds good on paper but technology must not be abused to save money. Regardless of cost issues, distance education should be instituted to advance the cause of education for the institution, not as a sole effort to save money. Kinnaman (1995) cautioned that "It's about a collaboration between teachers and technology that overcomes the restrictions of time and space, enabling students to learn more in less time, and with far less overhead." (p. 58).

In addition to cost considerations, the technology itself presents many problems. One issue is inadequate telecommunications facilities. Harry (1992) mentions that "the existing telecommunications systems are inefficient and/or expensive to use, so that educational institutions are unlikely to place too much reliance on them for teaching, support, or information searching" (p. 190). That is the reason why some developing countries still use print, cassettes, and radio delivery methods. Such circumstances prevent some instructors from producing or using advanced media and providing higher quality material for students.

Distance education via simultaneous two-way audio-visual interaction systems such as video teleconferencing, brings an additional set of issues to be considered by the instructor and effective models for this delivery system need to be identified (Sweet, 1986).

Some students, particularly those without home computers with modems could have difficulty communicating with the university or teacher. Lack of adequate hardware and the subsequent cost barrier of obtaining equipment could place undue hardship on some remote students. However, implementing other communications systems (phone mail, etc.) could help overcome this barrier.

Learning institutions must develop distance learning course material or pay a hefty price to order materials from distributors. For some institutions, the investment in production

technology may be worth the cost; however, a significant investment is necessary for production facilities, equipment, and personnel to produce videotapes. Using the Internet instead can overcome some of this problem but it poses additional difficulties in insuring all students have adequate access to the Internet.

The Internet is proving to be an effective delivery medium that enables communication of knowledge at the student's convenience. It has the potential, in fact, to change the nature of distance learning. But it is not without problems. Some fear the existing world wide telecommunications network is ill equipped to handle the rapid expansion of the Internet. Relying solely on the Internet for courseware and communications transmission is risky. In addition, using the Internet can degrade of the quality of interactions between and among staff and students. Due to the perceived anonymity provided by the Internet, abusive behavior could become a problem; however, these problems can be mediated with proper care and regulation.

The newest of the technological challenges lies in complying with government regulations. Course content may need to be limited based on the requirements in the decency section of the 1996 Telecommunications Act (Oaks, 1996). This section describes material deemed suitable for the Internet. Some courses, such as Anthropology or Human Sexuality, may not be appropriate for the Internet. Distance learning institutions must be aware of, and plan for, regulatory issues if the Internet is used for conveying course content.

Certainly not all distance courses use the Internet. Other technologies present ergonomical problems. For distance programs that implement video teleconferencing techniques, the physical environment and equipment set up is important. Because a classroom is often a noisy place, sensitive microphone equipment and non-sound absorbing rooms can

seriously diminish the sound quality. Likewise, inadequate lighting and improper camera placement can diminish the video quality. Some experimentation may be needed to solve these ergonomic problems.

Course Considerations

The last area of concern lies in the distance courses themselves. Institutions must consider course standards, curriculum development and support, course content, and course pacing in developing distance learning programs.

Many believe distance courses are inferior to traditional courses. Careful attention must be paid to the quality of the material presented in distance courses. Curriculums and assessment materials must be developed that equal that of the traditional classroom if distance courses are to receive the respect they deserve. Maintain the same course content, learning objectives, standards, and credits for all sections, regardless of method of delivery.

Assessing student performance is a problem area in distance learning. It is a commonly held belief that distance students perform more poorly in assessment than do internal students because of the additional pressures and burdens of distance study. However, a study of the results of 67 science subjects at California State University (CSU) over a six-year period showed conclusively that there was no difference between distance and internal students in the proportions of students in each grade category (Harden et al, 1994). However, objective testing does not reward soon enough for adequate reinforcement. Since one key to a successful learning campaign is positive reinforcement, testing methods must be developed to interactively test distance students.

More research into instructional methods and models is needed to identify those that work well in distance learning (Jackman, et, 1994). Participatory and active learning models are preferred by distance learning students. In a study of 93 Interactive Video Network (IVN) graduate students at North Dakota State University (1993 and 1994) found that IVN students placed high importance on active learning models (Jackman et, 1994). However, IVN teachers need to know the variety of teaching models available for use in the classroom so they can make educated choices in designing their coursework.

The course content affects student persistence. Some coursework is more conducive to distance classes. The course content itself cannot be ignored in any theoretical or practical consideration of distance education attrition (Bullen, 1996). Poorly designed course materials are key contributors to student attrition rates.

The last course consideration is the use of pacing techniques. Pacing material presented to students appears to have a positive effect course completion rates. In a 1986 completion rate study found that universities which used pacing techniques had completion rates that more than doubled those institutions in which the courses were open-ended (Coldeway, 1986). Although the coursework and delivery methods were the same, those institutions that paced student work were more successful at retaining distance learning students.

Summary and Conclusions

Although distance learning is not new, it has not received respect in the academic community because of the number and seriousness of problems presented here. The dramatic growth of the adult learner population is making distance learning an increasingly popular choice of learning techniques. Further study of student demographics and motivators will help target

the adult learner population and will help institutions develop course materials and techniques appropriately. Close scrutiny of the intrinsic problems in distance education will help overcome problems encountered by students and faculty. Understanding and mitigating technology problems are important, especially with the rapid expansion of technology. Further research into course development techniques will help learning institutions understand which methods work best in the distance learning classroom.

References

Anglin, G. (Eds.). (1991). Instructional Technology Past, Present, and Future. Englewood, Colorado: Libraries Unlimited, Inc.

Bullen, M. (1996). Distance Education & Technology Continuing Studies. http://www.cstudies.ubc.ca/disted

Chou, P. (1994). Guide to managing a telecourse/distance learning program. Suisun, California: Learning Resources Association.

Coldeway, D (1986). Learner characteristics and success. Distance Education in Canada , 81-87.

Cookson, P. (1989). Research on Learners and Learning in Distance Education: A Review. American Journal of Distance Education, 3(2), 22-34.

Creating the Virtual Community, (1996, Nov/Dec). Syllabus magazine, 10(4), p. 38.

Harden, T., Barnard, I. & Donnan, P. (1994). Success with science at a distance. OLAA Occasional Papers. Number 1, p.15-19.

Harry, K. (1992). Distance education today and tomorrow: A personal perspective. Educational Media International, 29(3), 189-192.

Hartshuh, T. (1991, Fall). Technology in the classroom of the future. New Horizons In Adult Education, 5(2), p. 4.

Jackman, D. & Swan, M. (1994). Alternative instructional models for IVN delivery (Vol. 1). Fargo: North Dakota State University, Central Duplicating.

Keegan, D. (1986). The Foundations of Distance Education. London: Croom Helm.

Kerka, S. (1986). Deterrents to Participation in Adult Education, ERIC Digest No. 59; ED275889 86, HTTP://www.ed.gov/databases/ERIC_Digests/ed275889.html.

Kinnaman, D. (1995, January). The future of distance education. Technology and Learning, 15(4), p. 58.

Knapper, C. (1988). Lifelong Learning and Distance Education. American Journal of Distance Education, 2(1), 63-72.

Knowles, M. (1980). The Modern Practice of Adult Education: From Pedagody to Androgogy. Chicago: Follett Publishers.

Knox, A. (1977). Adult Learning and Development. San Francisco: Jossey-Bass.

Marrs, L. (1995, June). An analysis of distance education and educational technology. Offices of Continuing Education and Information and Telecommunication Services. Bellingham, Washington: Western Washington University.

Meacham, D. & Evans, D. (1989). Distance Education: The Design of Study Materials. Open Learning Institute, Charles Stuart University, Wagga Wagga.

Moore, M. (1973). Towards a theory of independent learning and teaching. Journal of Higher Education, 44, 661-679.

Oaks, M. (1996). Western Cooperative for educational telecommunications. Washington state University. http://www.wiche.edu/telecom/techWASU.html

Rekkedal, T. (1983, Summer). Enhancing student progress in Norway. Teaching at a Distance, 23, 19-24.

Sheets, M. (1992, Spring). Characteristics of Adult Education Students and Factors Which Determine Course Completion: A Review, New Horizons in Adult Education, 6, Number 1, HTTP://www2.nu.edu/nuri/llconf/conf1995/rezabek.html

Sweet, R. (1986). Student Drop-out in Distance Education: An Application of Tinto's Model. Distance Education, 7, 201-213.

Verduin, J. & Clark, T. (1991). Distance Education: The foundations of effective practice. San Francisco, California: Jossey-Bass Publishers.

Verloove, G. (1993). Pedagogical applications of telematics. Educational Media International, 30(4), 205-208.

http://seamonkey.ed.asu.edu/~mcisaac/emc523old/wu523/paper523.html

Wood, H. (1996). Designing Study Materials for Distance Students", HTTP://www.csu.edu.au/division/oli/oli-rd/occpap17/design.htm